SCIENCE

FRIDAY, AUGUST 31, 1900.

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MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson N. Y.

DOCTORATES CONFERRED BY AMERICAN UNIVERSITIES.

REPORTS received from official sources show that during the past year the degree of doctor of philosophy has been conferred by 22 universities on 233 candidates. The numbers given by each university in the humanities and in the sciences and a comparison with the two preceding years are shown in the following table:

	Humanities.	Sciences.	Total for 1900.	1899.	1898.
Chicago	18	19	37	24	36
Harvard	21	15	36	24	26
Johns Hopkins	13	20	33	38	33
Yale	16	10	26	30	34
Columbia	9	12	21	33	22
Cornell	8	11	19	7	19
Clark	0	9	9	5	12
Pennsylvania	3	6	9	20	24
New York	7	0	7	9	5
Columbian	2	3	5	0	1
Michigan	4	1	5	4	7
Wisconsin	4	1	5	7	5
Brown	3	0	3	3	1
Minnesota	2	1	3	2	1
Princeton	2	1	3	3	0
Vanderbilt	2	1	3	0	0
California	1	1	2	3	1
Stanford	2	0	2	0	2
Virginia	2	0	2	2	0
Bryn Mawr	0	1	1	3	3
Nebraska	0	1	1	1	2
Tulane	1	0	1	0	0
Colorado	0	0	0	1	0
Kansas	0	0	0	1	0
Missouri	0	0	0	1	0
Syracuse	0	0	0	1	0
Washington	0	0	0	2	0
Total	120	113	233	224	234

tures. The few species known to Pasteur have become many and distinct in the hands of modern students. The diseases peculiar to fermentated products, attributed by Pasteur to bacteria, have been found to be frequently due to yeasts which are present as impurities, and the whole method of conducting fermentations in the great breweries has been modified in consequence. All these facts are brought out in more or less detail in this work of Jorgensen, who shows on every page of his writing a knowledge of the facts at first hand.

The whole work is not confined to the fermentations produced by yeasts. The growing knowledge of the significance of bacteria in fermentations has demanded attention, and the more important species of moulds are not overlooked. The treatment of this side of the subject is much less satisfactory than the study of yeasts. In his discussion of the butyric fermentation, the lactic fermentation and other strictly bacteriological phenomena Professor Jorgensen is evidently not so much at home as when he is writing of yeasts.

The most valuable part of the work is, therefore, the review of our present knowledge of yeasts. He describes the methods of studying air and water; the most recent methods of obtaining absolutely pure cultures of yeasts, the methods of cultivating them and experimenting with them. A considerable part of the work is taken up by a description and by figures of the many species of yeasts which have been differentiated from each other by modern study. Their methods of forming spores, of germinating, of forming films, and, in short, all of the characters of yeasts which are used today by the specialists in describing yeasts are carefully and fully discussed. As a morphological and physiological study of this extremely important group of plants the present work is complete and unequaled. Certainly there is no work in English that contains such a comprehensive account of the modern knowledge of yeasts and their relation to fermentation.

The name of The Macmillan Company on the title page is a sufficient guarantee of the excellence of the press work, as the name of the author is a guarantee for its scientific accuracy. It seems strange, however, that the author, the translators and the publishers should have allowed such a book to be published without an index. A book of this sort may perhaps be designed for consecutive reading, but it will be much more commonly used as a book of reference. As a book of reference its value would be doubled by the presence of a good index. No excuse can be given in these days of many books for omitting such an indispensable part as an index. The lack of the index is in part made up by a magnificent bibliography containing references to all the important works bearing directly or indirectly upon the problems of fermentation. This will be to the student perhaps the most useful part of the whole work.

H. W. C.

BOOKS RECEIVED.

Air, Water and Food from a Sanitary Standpoint. ELLEN H. RICHARDS and ALPHEUS G. WOODMAN. New York, John Wiley & Sons; London, Chapman and Hall, Limited. 1900. Pp. iv + 226. $2.00.

Prehistoric Implements. WARREN K. MOOREHEAD. Cincinnati, The Robert Clarke Co. 1900. Pp. xv + 429.

Die Chemie in täglichen Leben. LASSAR-COHN. Fourth edition. Hamburg and Leipzig, Leopold Voss. 1900. Pp. viii + 320. 4 Mark.

A Brief Course in General Physics, Experimental and Applied. GEORGE A. HOADLEY. New York, The American Book Company. 1900. Pp. 463. $1.20.

SCIENTIFIC JOURNALS AND ARTICLES.

The Journal of Physical Chemistry, April. 'A Preliminary Investigation of the Conditions which determine the Stability of Irreversible Hydrosols,' by W. B. Hardy; 'On the Mechanism of Gelation in Irreversible Systems,' by W. B. Hardy; 'Isohydric Solutions,' by W. D. Bancroft; 'Vapor-pressure Relations in Mixtures of Two Liquids,' by A. E. Taylor; 'In Reply to a Statement made by Dr. R. Cohen in a Paper on the Theory of the Transition Cell of the Third Kind,' by H. T. Barnes.

May. 'On the Weston Cell as a Transition Cell and as a Standard of Electromotive Force, with a Determination of the Ratio to the Clark Cell,' by H. T. Barnes; 'On the Electrolytic Deposition of Metals from Non-Aqueous Solu-

tions,' by Louis Kahlenberg—Faraday's law was found to hold approximately in such solutions; 'Vapor-pressure Relations in Mixtures of Two Liquids, II,' by A. E. Taylor; 'On the Determination of Transition Temperatures,' by H. M. Dawson and P. Williams; 'The Driving Tendency of Physico-Chemical Reaction, and its Temperature Coefficient,' by T. W. Richards.

June. 'The Allotropic Forms of Selenium,' by A. P. Saunders—an exhaustive contribution to an illy investigated subject. The author finds that selenium exists in three distinct forms:

1. Liquid (including vitreous, amorphous, and soluble selenium).

2. Crystalline red (including perhaps two closely allied forms).

3. Crystalline gray or metallic.

'An Exposition of the Entropy Theory,' by J. E. Trevor; 'Entropy and Heat-Capacity,' by J. E. Trevor; 'The Relation of the Taste of Acid Salts to their Degree of Dissociation, II,' by Louis Kahlenberg—showing that the theory of electrolytic dissociation does not satisfactorily account for the phenomena connected with the sour taste of acid salts of weak acids. A rejoinder to the work of T. W. Richards and of A. A. Noyes.

DISCUSSION AND CORRESPONDENCE.

EMINENT AMERICAN MEN OF SCIENCE.

To the Editor of Science: In Science of August 17th I notice the names of about twenty eminent Americans proposed as suitable to be engraved in the Hall of Fame of the New York University and also your question as to how many men of science should be included, and who they should be. In response to the query I beg respectfully to suggest the following names: Professor O. C. Marsh, Professor E. D. Cope, Dr. James Hall, Dr. D. G. Brinton, Professor J. D. Dana, Professor Newberry, Professor Orton, and Professor Alexander Winchell, in addition to those already mentioned. I do not see how these eight names could be omitted from such a list, nor do I see how the names of Henry, Silliman, Torrey, Gray, Hitchcock, and Baird could be left out. I should think that at least thirty men of science should be included among the one hundred.

Henry Montgomery.

Trinity University, Toronto,
August 20, 1900.

INTERNATIONAL COMMISSION ON ATOMIC WEIGHTS.

Science for August 17th contained a resumé of the report of the committee of the German Chemical Society, giving the views of the International Commission on Atomic Weights. On the chief point at issue, the selection of a standard for atomic weights, with the exception of six German members and one American (Professor Mallet), the commission was unanimous for oxygen = 16. This point, at least, would have seemed settled, but the German minority have in the last *Chemical News* reopened the question. The essence of their argument for H = 1 is comprised in the following paragraph:

"For the teacher, simplicity and clearness of the foundation seem specially important; instruction must suffer no harm with regard to the enlightening construction of the law of volumes, no shadow of doubt must penetrate the doctrine of valency. Regard for the understanding of prospective chemists will compel us therefore, under all circumstances, in teaching and in our text-books, to retain Dalton's numbers, and Professor F. W. Clarke, the worthy editor of the Annual Atomic Weight Tables of the American Chemical Society, authorizes us to say that he recommends the retaining of the standard H = 1. For if numbers were used in practice which were unsuitable to use in teaching, confusion would be the natural consequence, instead of the unanimity desired by all."

The German minority therefore calls upon all teachers of chemistry in universities and technical high schools to take a definite position in regard to this matter, and to send their answers to the subjoined questions to Professor J. Volhard, Halle-a-S., Mühlpforte 1, at their earliest convenience. The editor of the *Chemical News* also desires to publish copies of these replies. The questions are as follows:

1. Shall the unity of hydrogen be retained as the standard for reckoning atomic weights?

2. Shall the atomic weights be given approximately with two decimal places in which the